Supplementary Materials

Large transverse magneto-thermoelectric effect in narrow-band-gap polycrystalline $Ag_{2-\delta}Te$ †

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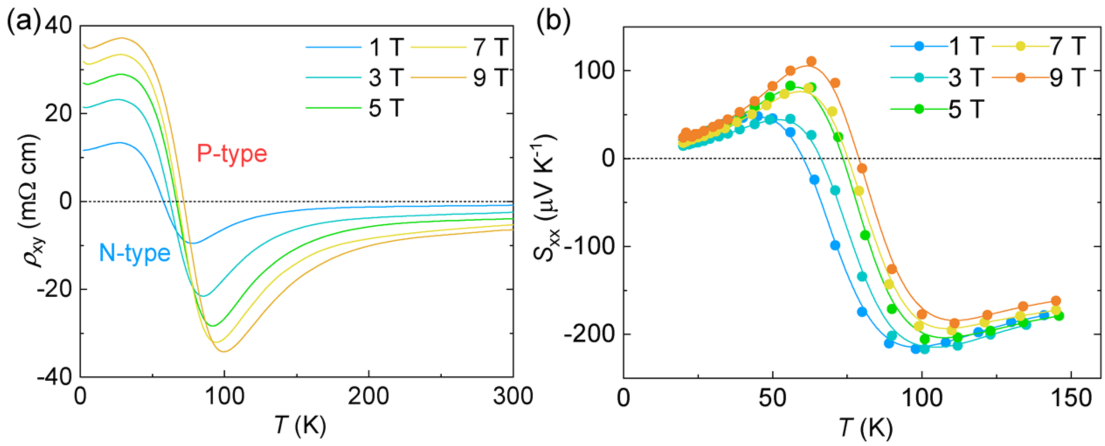

Fig. S1 The temperature dependent (a) Hall resistivity ρ_{xy} and (b) Seebeck coefficient S_{xx} of $Ag_{2-\delta}Te$ under the magnetic field of 1, 3, 5, 7, and 9 T. The N-P transition point shifts towards higher temperatures with the increase of the magnetic field.

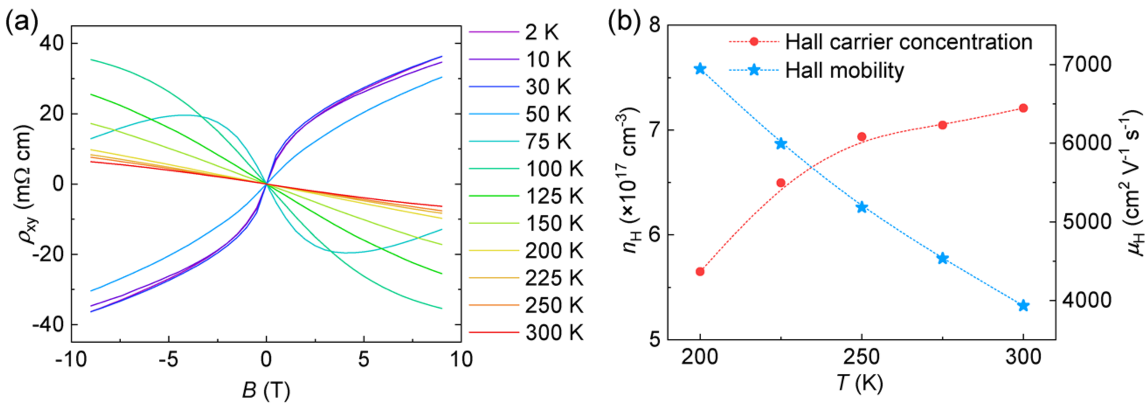

Fig. S2 (a) The magnetic-field dependent Hall resistivity ρ_{xy} of $Ag_{2-\delta}Te$ at various temperatures between 2 K and 300 K. (b) The Hall carrier concentration n_H and Hall mobility μ_H of $Ag_{2-\delta}Te$ at 200-300 K calculated based on the almost linear curve of ρ_{xy} in (a). The linear curves in (a) indicate that the sample is predominantly in a single-carrier model.

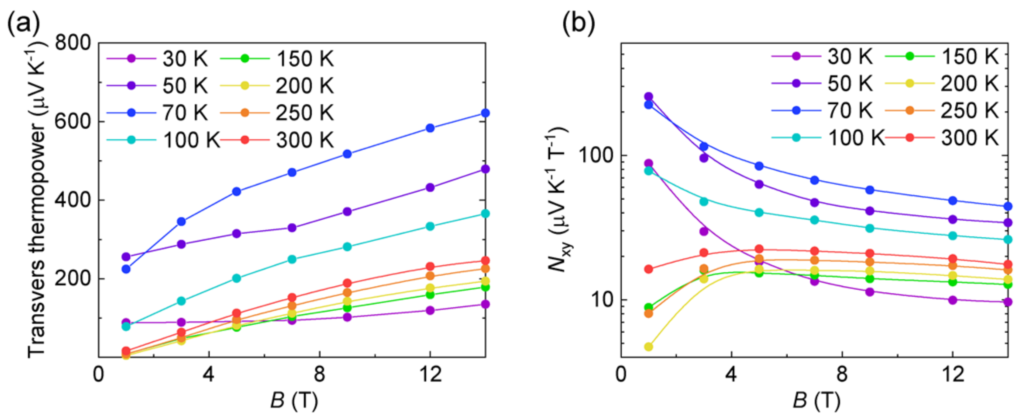

Fig. S3 The magnetic-field-dependent transverse thermopower (a) and Nernst coefficient N_{xy} (b) of $Ag_{2-\delta}Te$ under 1-14 T between 30 K and 300 K. The N_{xy} values are calculated by the magnetic-field-dependent transverse thermopower using $N_{xy} = S_{xy}/\mu_0 H$. The different behaviors on both sides of 100 K reveal the temperature-dependent band structure of $Ag_{2-\delta}Te$. It gradually deviates from a linear band structure as the temperature increases.

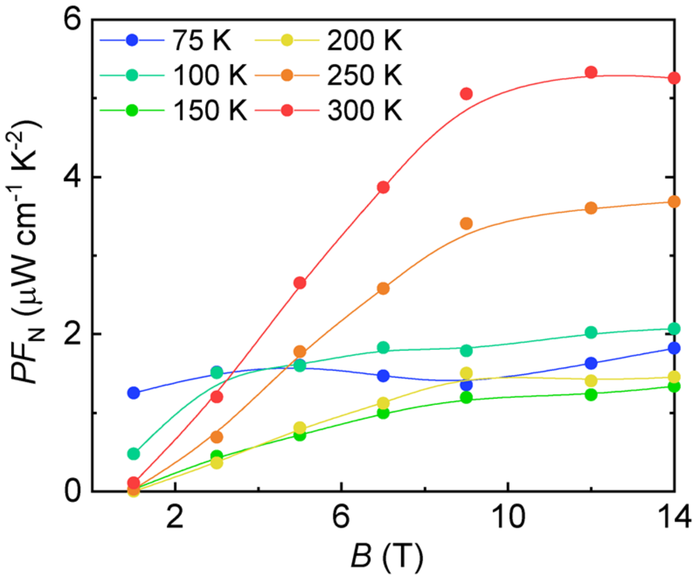

Fig. S4 The magnetic-field-dependent transverse power factors PF_N of $Ag_{2-\delta}Te$ under 1-14 T at various temperatures between 75 and 300 K. It saturates at 3 T below 100 K. As the temperature increases above 100 K, the saturated magnetic field reaches about 7 T.

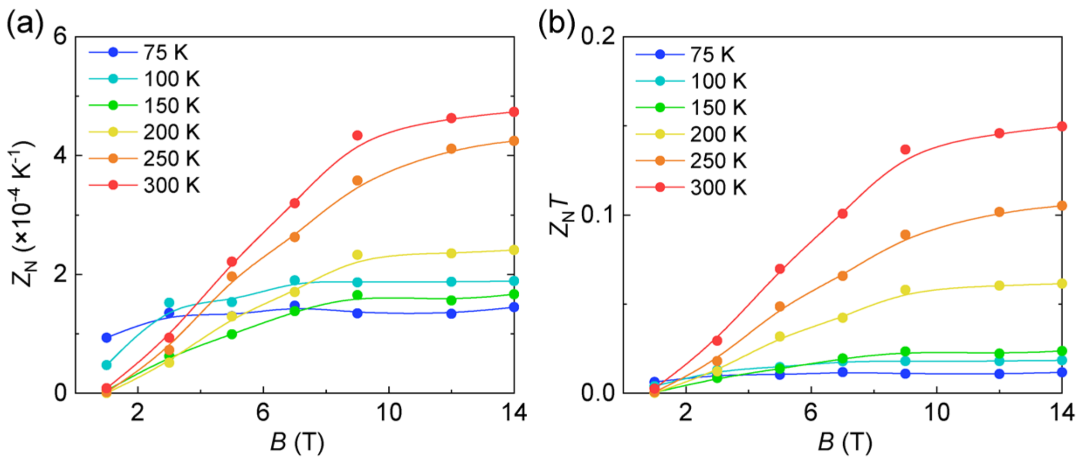

Fig. S5 Magnetic field dependence of figure of merit Z_N (a) and $Z_N T$ (b) in $Ag_{2-\delta}Te$ under 1-14 T between 75 and 300 K. Both Z_N and $Z_N T$ exhibit an initial increase followed by saturation as the magnetic field increases.

Table S1 The average Z_N and the corresponding temperature range comparison of partial single-crystal and polycrystalline materials.

	Materials	Temperature range (K)	ΔT (K)	Average Z_N ($\times 10^{-4}$ K^{-1})
Single-crystal	WTe_2[1]	7-16	9	193.8
	$NbSb_2$[2]	5-70	65	26.6
	$PtSn_4$[3]	5-30	25	9.4
	$Bi_{97}Sb_3$[4]	75-300	215	27.6
	Cd_3As_2[5]	100-350	250	12.1
	$ZrTe_5$[6]	80-200	120	5.1
Polycrystalline	Ag_2Se[7]	80-300	220	0.23
	NbP[8]	15-300	285	0.52
	NbP[9]	30-300	270	0.58
	$Bi_{77}Sb_{23}$[10]	50-300	250	2.15
	$Ag_{2-\delta}Te$ (our work)	80-300	220	2.90
	$NbSb_2$[11]	5-100	95	9.75

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